

### **REMARKS / ARGUMENTS**

Claims 1-40 are pending in the instant application. Claims 1-7, 11, 15, 21-22, 24, 26-28, 32-34 and 36 have been amended to clarify the claim language. The Applicant points out that the amendments to the respective claims are supported at least in paragraphs 48-49 and Figs. 6a-6b of the specification.

Claims 1-10, 14-20, and 24-31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's Admission of Prior Art ("APA") in view of USP 4,999,596 ("Nakatani"). Claims 11-13, 22-23 and 32-40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over APA and Nakatani, in view of USP 5,794,131 ("Cairns"). The Applicant respectfully traverses these rejections at least based on the following amendments and remarks.

### **REJECTION UNDER 35 U.S.C. § 103**

In order for a *prima facie* case of obviousness to be established, the Manual of Patent Examining Procedure, Rev. 6, Sep. 2007 ("MPEP") states the following:

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."

See the MPEP at § 2142, citing *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), and *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval). Further, MPEP § 2143.01 states that “the mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art” (citing *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007)). Additionally, if a *prima facie* case of obviousness is not established, the Applicant is under no obligation to submit evidence of nonobviousness:

The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

See MPEP at § 2142.

**I. The Proposed Combination of APA and Nakatani Does Not Render Claims 1-10, 14-20 and 24-31 Unpatentable**

**A. Independent Claims 1 and 21**

With regard to the rejection of independent claim 1 under 35 U.S.C. § 103(a), the Applicant submits that the combination of APA and Nakatani does not disclose or suggest at least the limitation of “generating, in a transmitter, a local oscillator (LO) differential signal at a particular frequency, ...and attenuating, in said transmitter, said selected frequency content disposed in said region around the LO harmonic frequency,” as recited in Applicant’s claim 1.

In the Office Action, the Examiner relies on APA to disclose a LO in a transmitter generating a particular frequency, with a LO harmonic frequency. The Examiner concedes the following:

“However, APA fails to teach attenuating in said transmitter said selected frequency content disposed in said region around the LO harmonic frequency....”

See the Office Action at page 3. The Examiner relies for support on Nakatani (col. 6, lines 28-35, abstract) to allegedly make up for this deficiency, and specifically Nakatani’s disclosure of a strip line stub as a second harmonic choke filter to filter the second harmonic of the fundamental frequency of a LO signal. However, Nakatani does not disclose or suggest that the LO signal is a differential signal. With regard to the limitation of the differential signal, the Examiner states the following in the rejection to claim 14:

“With respect to claim 14, applicant's admitted prior art in view of Nakatani further teaches the LO signal comprises a differential signal (applicant's admission of prior art, Fig.1, Fig.2, par [0004-0013]).”

See the Office Action at page 6. The Examiner alleges that Applicant’s Fig.1, Fig.2, and paragraphs [0004-0013] disclose a LO differential signal as admitted prior art. The Applicant respectfully disagrees, and points out that the first time “LO differential signal” is mentioned is in the Summary of the Invention in paragraph 0014, for example, “The signal may be, for example, a single-ended signal, a differential signal and/or a set of signals in quadrature” (See the

Specification in paragraph 0014). There is no mention or discussion of a differential signal in the Background (the Examiner's alleged APA). In this regard, Applicant's "LO differential signal" is different from the alleged prior art.

Base on the foregoing rationale, the Applicant maintains that the combination of APA and Nakatani does not disclose or suggest at least the limitation of "generating, in a transmitter, a local oscillator (LO) differential signal at a particular frequency, ...and attenuating, in said transmitter, said selected frequency content disposed in said region around the LO harmonic frequency," as recited in Applicant's claim 1. Applicant's claim 1 is, therefore, submitted to be allowable.

Independent claim 21 is similar in many respects to independent claim 1. Therefore, the Applicant respectfully submits that claim 21 is also allowable at least for the reason stated above with regard to claim 1.

**B. Dependent Claims 2-10, 15-20 and 24-31**

Dependent claims 2-10, 15-20 and 24-31 depend directly or indirectly from independent claims 1 and 21, respectively. Consequently, claims 2-10, 15-20 and 24-31 are submitted to be allowable at least for the reasons stated above with regard to claim 1.

**B(1). Rejection of Dependent Claim 15**

Regarding dependent claims 15, the Examiner states the following:

“With respect to claim 15, applicant's admitted prior art in view of Nakatani further teaches the LO signal comprises a quadrature (applicant's admission of prior art, Fig.1, Fig.2, par [0004-0013]).”

See the Office Action at page 6. The Applicant refers the Examiner to Applicant's arguments in subsection I-A, that the first time the LO differential signal comprises a “quadrature signal” is mentioned is in the Summary of the Invention in paragraph 0014. There is no mention or discussion of a differential signal in the Background (the Examiner's alleged APA). In this regard, Applicant's “LO differential signal” is different from the alleged prior art. Applicant's dependent claim 15 is, therefore, submitted to be allowable.

**II. The Proposed Combination of APA, Nakatani and Cairns Does Not Render Claims 11-13, 22-23 and 32-40 Unpatentable**

The Applicant now turns to the rejection of claims 11-13, 22-23 and 32-40 as being unpatentable over APA and Nakatani in view of Cairns.

**A. Rejection of Dependent Claims 11-13 and 22-23**

Based on at least the foregoing, the Applicant believes the rejection of independent claims 1 and 21 under 35 U.S.C. § 103(a) as being unpatentable by

the combination of APA and Nakatani has been overcome and requests that the rejection be withdrawn. Cairns does not overcome the deficiencies of APA and Nakatani. Additionally, claims 11-13 and 22-23 depend directly or indirectly from independent claims 1 and 21, respectively, and are, consequently, also respectfully submitted to be allowable.

**A(1). Rejection of Dependent Claim 13**

Regarding dependent claims 13, the Examiner states the following:

“With respect to claims ...13, 22-23 applicant's admitted prior art and Nakatani teaches all the limitations of claim 1 except for ...wherein **the selective attenuating of the frequency content is performed within the buffer** which is taught in related art by Cairns (See col.4, lines 1-36, Fig.3).”

See the Office Action at page 11. The Applicant points out that Cairns (See col.4, lines 1-36, Fig.3) merely mentions about spurious outputs degrade spectral purity. Cairns does not disclose the alleged “the selective attenuating of the frequency content is performed within the buffer.” In this regard, Cairns does not overcome the deficiency of APA and Nakatani, and claim 2 is submitted to be allowable.

**B. Independent Claim 32**

With regard to the rejection of independent claim 32 under 35 U.S.C. § 103(a), the Examiner relies for support on Cairns to disclose a buffer to buffer the

LO signal. However, Cairns, still does not disclose or suggest “a local oscillator (LO) **differential** signal.” With regard to the limitation of the differential signal, the Examiner states the following in the rejection to claim 33:

“With respect to claim 33, applicant's admitted prior art and Nakatani in view of Cairns further teaches the signal is a differential signal (Cairns, col 4, lines 9-25).”

See the Office Action at page 13. The Examiner relies for support on the following citation of Cairns:

“For the digital quadrature modulation ("I/Q") mode, device 100 must be provided with I ("in phase") and Q ("quadrature") differential baseband modulator input signals. A phase shift network 128 at the output of image of reject filter 122 provides mixer output signals in quadrature (i.e., one signal is phase shifted by 90 degrees relative to the other)-although in this example, **the quadrature components produced by mixer 116 are not combined so the phase shift network 128 is for conceptual use only.** These quadrature signals are low pass filtered by low pass filters 126 and 130, respectively before being multiplied with the I and Q 20 modulation input signals by modulation mixers 132, 134. The outputs of mixers 132,134 are summed by summer 136. A variable gain amplifier 138 and. a power amplifier 140 further process the summed signal to provide the digital mode modulated output.”

See Cairns at col. 4, lines 9-25. The Examiner seems to allege that the I/Q quadrature signals produced by the mixer 116 are the alleged LO differential signals. The Applicant respectfully disagrees, and points out that “I/Q signals” refer to 90 degrees **phase difference**, while “differential signals” refer to signals with **opposite polarity in amplitude**. In this regard, “phase” is independent of “amplitude”, and therefore are not the same.

In addition, even assuming that the I/Q signals are the alleged “differential signals” (which they are not), the Examiner’s argument is still deficient. For example, Cairns discloses that it is the “mixer 116” (i.e., not the VCO 104, the alleged “LO”), which produces the I/Q signals (the alleged “differential signals”). In this regard, the Cairns does not disclose or suggest the alleged “LO differential signals”, and Cairns does not overcome APA and Nakatani’s deficiencies. Independent claim 32 is submitted to be allowable, and the Applicant respectfully requests that the rejection of claim 32 under 35 U.S.C. § 103(a) be withdrawn.

**C. Rejection of Dependent Claims 33-40**

Based on at least the foregoing, the Applicant believes the rejection of independent claims 32 under 35 U.S.C. § 103(a) as being unpatentable by APA and Nakatani in view of Cairns has been overcome and requests that the rejection be withdrawn. Additionally, claims 33-40 depend directly or indirectly from independent claim 32, respectively, and are, consequently, also respectfully submitted to be allowable.

**C(1). Rejection of Dependent Claim 34**

Regarding dependent claims 34, the Examiner states the following:

“With respect to claim 34, applicant's admitted prior art and Nakatani in view of Cairns further teaches the signal is a quadrature (Cairns, col. 4, lines 9-25).”



See the Office Action at page 11. The Examiner is referred to Applicant's above arguments in subsection II-B, that Cairns (See col.4, lines 9-25) discloses that it is the mixer 116, not the VCO 114 (the alleged "LO") which produces the quadrature signals. In this regard, Cairns does not disclose or suggest the alleged "the **LO signal** comprises a quadrature signal". Cairns does not overcome the deficiency of APA and Nakatani, and claim 34 is submitted to be allowable.

**C(2). Rejection of Dependent Claim 35**

Regarding dependent claims 35, the Examiner states the following:

"With respect to claim 35, applicant's admitted prior art in view of Nakatani in view of Cairns further teaches the signal generator comprises a differential signal generator (Cairns, colA, lines 9-25)).

See the Office Action at page 11. The Examiner is referred to Applicant's above arguments in subsection II-B in, that Cairns (See col.4, lines 9-25) does not disclose the alleged "LO differential signals". In this regard, Cairns does not disclose or suggest the alleged "signal generator". Cairns does not overcome the deficiency of APA and Nakatani, and claim 35 is submitted to be allowable.

**C(3). Rejection of Dependent Claim 36**

Regarding dependent claims 36, the Examiner states the following:

"With respect to claim 36, applicant's admitted prior art and Nakatani in view of Cairns further teaches the buffer comprises a differential pair of transistors, the differential pair of transistors being adapted to receive the signal (Fig.3 of Cairns)."

See the Office Action at page 11. The Examiner is referred to Applicant's above arguments in subsection II-B in, that Cairns (See col.4, lines 9-25) does not disclose the alleged "LO differential signals". Likewise, Cairns does not disclose or suggest the alleged "differential pair of transistors". Cairns does not overcome the deficiency of APA and Nakatani, and claim 36 is submitted to be allowable.

The Applicant also reserves the right to argue additional reasons beyond those set forth above to support the allowability of claims 1-40.

**CONCLUSION**

Based on at least the foregoing, the Applicant believes that all claims 1-40 are in condition for allowance. If the Examiner disagrees, the Applicant respectfully requests a telephone interview, and requests that the Examiner telephone the undersigned Patent Agent at (312) 775-8093.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

A Notice of Allowability is courteously solicited.

Respectfully submitted,

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